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THE NEW ENGLAND BOTANICAL CLUB

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AN INTERGENERIC HYBRID IN THE CYPERACEAE.

M. L. FERNALD.

(Plate 125.)

IN September, 1915, Mr. C. A. Weatherby discovered on the sandy shore of Simmons Pond in Dennis, Massachusetts, a very remarkable plant which combined the aspect of *Rynchospora* with elongate many-scaled spikelets similar to those of *Cyperus*. The material originally collected was practically all sterile, the spikelets bearing no well-formed flowers. In view of the surprisingly large number of representatives known on Cape Cod of extreme austral groups, attempts were made to identify the Dennis plant with austral genera of the *Cyperaceae*, but nothing was found with which it could be satisfactorily placed.

In August, 1918, Mr. Bayard Long and the writer visited Simmons Pond with the hope of rediscovering Mr. Weatherby's anomalous plant, which happily was found at apparently the original station, a single tussock from which a portion had obviously been removed. A few additional specimens were taken but the root was undisturbed, and study of this material shows it to be identical with Mr. Weatherby's specimens except that in the new material a few aborted flowers are present. These flowers completely lack a perianth, as in *Cyperus*, but are surrounded by 2 or 3 scales, as in *Rynchospora*, and the minute and shrunken achene is capped by a clearly discernible, though shrunken, tubercle, as in *Rynchospora*. The few flowers found so clearly combine the traits of *Cyperus* and *Rynchospora*, the genera which are closely simulated by the inflorescences of the plant, that it

seems a safe conclusion to state that this colony is a sterile hybrid of members of these two genera.

The only members of the genera found on the sandy beach of Simmons Pond are the common *Cyperus dentatus* Torr. and *Rynchospora capitellata* (Michx.) Vahl.¹, the plant which has been generally known in the northern United States as *R. glomerata*. The hybrid colony has the foliage much firmer and more leathery than in the *Rynchospora*, in this character strongly suggesting *Cyperus dentatus*. The culms are densely cespitose, as in the *Rynchospora*, and are without any suggestion of the elongate stolons of the *Cyperus*. The caudine leaves are rapidly reduced in size, as in the *Rynchospora*, and the axillary and terminal corymbs are strongly castaneous as in that plant but with a more pronounced umbelliform aspect, while the very slender spikelets have the aspect of those of a *Cyperus*, being linear-cylindric with very numerous (20-40) closely imbricated somewhat carinate scales. The latter, however, are spirally arranged as in *Rynchospora* but have the characteristic short awn of *Cyperus dentatus*. In the absence of a perianth such flowers as have developed show traits of *Cyperus* but in the large subulate tubercle and the secondary spikelets *Rynchospora capitellata* is suggested.

It is certainly a very unusual and possibly an unprecedented circumstance to find an apparent hybrid between plants of such remote affinity as *Cyperus* and *Rynchospora*, members of very different tribes of the *Cyperaceae*. The characters, however, are so conclusive a blend of those of the two common members of these genera at Simmons Pond that it is difficult to avoid the conclusion that this colony has thus arisen. Through the kindness of Mrs. Weatherby, who has freely given the use of her skill, the habit and essential points of this interesting plant are shown in Plate 125. The plant, being of such unusual interest, should have a definite name for convenience of reference and it is here proposed as

× *Cyperus Weatherbianus*, n. hybr. = *Cyperus dentatus* × *Rynchospora capitellata*, habitu ut apud *Rynchosporam capitellatam*; culmis caespitosis 3-4.8 dm. altis gracilibus laevibus; foliis subcoriaceis basilaribus anguste linearibus elongatis, caulinis 5-7 valde reductis; corymbris subumbelliformibus terminalibus axillariibusque, terminalibus 1.3-2 cm. diametro; spiculis confertis valde

¹ See Blake, *RHODORA*, xx. 27 (1918).

adscendentibus castaneis anguste linearci-cylindricis 0.5–1 cm. longis; squamis 20–40 densissime spiraliter imbricatis castaneis membranaceis oblongis 1.5–2 mm. longis subcarinatis breviter aristatis; floribus sparsissimis plerumque nullis; spiculis secondariis ut apud *Rynchosporam* minutis; perianthiis nullis; achenio abortivo minuto, stylo 2-partito, tuberculo subulato.

Habit as in *Rynchospora capitellata*; culms cespitose, 3–4.8 dm. high, slender and smooth: leaves somewhat leathery; the basal narrowly linear, elongate; the caudine 5–7, greatly reduced: corymbs somewhat umbelliform, terminal and axillary; the terminal 1.3–2 cm. in diameter: spikelets crowded, strongly ascending, chestnut-brown, slenderly linear-cylindric, 0.5–1 cm. long: scales 20–40, very densely spirally imbricated, chestnut-brown, membranaceous, oblong, 1.5–2 mm. long, somewhat keeled, short-awned: flowers very scarce, mostly wanting: secondary spikelets as in *Rynchospora*, minute: perianth wanting: achene aborted, minute; style 2-parted; tubercle subulate. — MASSACHUSETTS: sandy shore of Simmons Pond, Dennis, September 30, 1915, C. A. Weatherby (TYPE in herb. New England Botanical Club), and collected apparently from the same clump, August 22, 1918, Fernald & Long, no. 16,287. PLATE 125.

GRAY HERBARIUM.

EXPLANATION OF PLATE 125.

Fig. 1. \times *Cyperus Weatherbianus*, portion of clump $\times \frac{1}{2}$.
 Fig. 2. " " terminal corymb $\times 1$.
 Fig. 3. " " spikelet $\times 2$.
 Fig. 4. " " scale $\times 6$.
 Fig. 5. " " denuded rhachilla, showing secondary spikelets $\times 15$.
 Fig. 6. *Cyperus dentatus*, spikelet $\times 2$.
 Fig. 7. *Rynchospora capitellata*, spikelet $\times 2$.

FURTHER NOTES ON POTAMOGETON.

HAROLD ST. JOHN.

Potamogeton vaginatus Turcz. is represented in the Herbarium at the Jardin des Plantes, Paris, by a suite of specimens with abundant fruiting spikes. These show that in spite of the phrasing of the original description¹ and of the colored representation in Fryer's

¹ Turcz. Bull. Soc. Nat. Moscou, xi. 102 (1838), xxvii. 65 (1854), Fl. Baical.-Dahur. ii. 162 (1856).

Potamogetons of the British Isles,¹ this species, *P. vaginatus*, has its stigma not terminal but, rather, laterally and asymmetrically placed. There is some variation in this character, but it occurs in fruits from the same spike, rather than definitely on separate plants from distinct regions. This makes it clear that the large-sheathed species with many whorls of fruit, described from the northern part of North America as *P. moniliformis* St. John, cannot on any character be separated from the Eurasian plant. *P. moniliformis* St. John is, then, a synonym of *P. vaginatus* Turcz., a rare and local, but typically circumpolar plant which should be sought in the waters of all the cooler parts of the northern hemisphere.

Whether the name *Potamogeton marinus* L. or *P. filiformis* Pers. should be adopted for the northern setaceous-leaved species is a question that has constantly recurred. The writer² in 1916 discussed the point and concluded that the name *P. filiformis* Pers. would have to be adopted. In the Herbarium at the Jardin des Plantes, Paris, is a sheet of this species collected by Nolte. On the ticket he has written a full synonymy with page references, and a discussion of the pros and cons. Since Nolte has frequently been accredited the authorship of the name *P. filiformis*, this bit of evidence seems worth quoting.

“*P. pusillum* Boccon. *dubiae*

P. setaceus Schumacher

P. filiformis Pers.

Nolte; Chamisso & Schlechtendal, [etc.]

Monsieur Fries pretend la reconraire Linné *Potam. marin!*

Oeder: etc. fl. Dan. pretend que le *pectinatum* soit le *Potam. marin.*

Hartmann pretend que la plante que Monsieur Fries a nommé *Potam. zosteraceus* soit le *marinus*.

je m'excuse au *P. marin!*”

It is clear, then, that Nolte decided that *P. marinus* L. could not be exactly identified and that *P. filiformis* Pers. must be adopted as the name of this species.

SOMEWHERE IN FRANCE.

¹ Freyer, *Pot. Brit. Isl.* t. 58 (1915).

² St. John, *RHODORA*, vii. 133 (1916).

REPORT OF COMMITTEE ON FLORAL AREAS.

(Continued from page 185.)

HALOPHYtic SPECIES.

Ranunculus Cymbalaria follows the sea shore, thriving in salt marshes and on brackish shores. It is less frequent southward, with only three stations known on the Connecticut sea-coast.

COASTAL SPECIES.

Ranunculus laxicaulis and *R. sceleratus* are mainly coastal in our area, but not halophytic, seeking out clayey streams and pools; the former running east to Deer Isle, the latter to Brunswick, Me. Both follow the lower Connecticut river inland, the former to Alstead, N. H. There is a lone station for *R. sceleratus* at Sheffield, Mass., on the Housatonic. It also occurs near Lake Champlain at Colchester and Burlington, Vt. (Mrs. N. F. Flynn).

NORTHERN SPECIES.

<i>Ranunculus pennsylvanicus</i>	<i>Ranunculus septentrionalis</i>
“ <i>reptans</i>	“ <i>abortivus</i> , var. <i>eucyclus</i>

These plants avoid southeastern New England entirely, but have scattered stations in other parts of Massachusetts and Connecticut.

SOUTHERN SPECIES OF DRY SOILS.

<i>Anemone cylindrica</i>	<i>Hepatica americana</i>
“ <i>virginiana</i>	<i>Ranunculus hispidus</i>
<i>Anemonella thalictroides</i>	<i>Thalictrum dioicum</i>
<i>Aquilegia canadensis</i>	“ <i>revolutum</i>

Anemonella thalictroides, *Ranunculus hispidus* and *Thalictrum revolutum* are limited to southern New England, while the other species

range north to central Maine. *Hepatica americana* also grows in Nova Scotia.

CALCIPHILE SPECIES.

Northern	<i>Anemone canadensis</i> " <i>multifida</i> , var. <i>Hudsoniana</i> " <i>parviflora</i> " <i>riparia</i> <i>Clematis verticillaris</i> <i>Thalictrum confine</i>
Alleghenian	<i>Hepatica acutiloba</i> <i>Ranunculus allegheniensis</i>
Southern Trap-rock	<i>Ranunculus fascicularis</i> " <i>micranthus</i>

The calciphiles are very interesting, from the closeness with which they follow the calcareous rocks. They seem to depend on lime in the soil. The northern group contains species abundant north and west of New England. *Clematis verticillaris* is the most generally distributed of these, for it does not depend entirely on substrata for its lime, but finds it sometimes in rich humus on other rocks, as on quartzite at Killingly, Conn.¹. *Anemone riparia* seems to have sought out calcareous areas throughout, although especially abundant in Aroostook County and western Vermont. *A. canadensis* is abundant in the alluvium of the St. John and Penobscot valleys in Maine, in the Champlain region and in the Housatonic valley. The stations in eastern Massachusetts seem to be introduced.

Thalictrum confine, discovered at Van Buren, Ft. Fairfield and Caribou, Maine, by Prof. M. L. Fernald, has also been found on ledges along Lake Champlain, from Ferrisburg to North Hero. *Anemone multifida*, var. *hudsoniana* grows in ledges of the St. John River at St. Francis and by the Fish River at Fort Kent, and at Aroostook Falls in New Brunswick. This was also found by Robbins and others in the

¹ An old report in Archives of Science, vol. 1, no. 5 (1872) by G. H. Perkins, gives a record of *C. Viorna* from Wantasket Mt., N. H., by C. C. Frost. Undoubtedly this was *C. verticillaris*,

gorge of the Winooski River in Colchester, Vt., also at Highgate Springs, Vt. (Jesup). *A. parviflora* is not represented by any specimens from New England. It was reported by Dr. George L. Goodale (Ag. & Geol. of Me. 366, 1861) "along the shore on a wet soil especially in wet and disintegrating slates" and in Ag. & Geol. of Me. 125, 1862 "abundant along the main river in the disintegrating slates." The context shows that Goodale was exploring the main St. John River from Ft. Kent to Seven Islands, a region little visited by botanists since that time. As Prof. Fernald says in litt. "the habitat, wet disintegrating slate, is exactly the habitat of *A. parviflora* on the Restigouche River, just east of the St. John and through the Gaspé and Newfoundland calcareous regions."

Hepatica acutiloba is very abundant in moist calcareous regions of Vermont, Franklin and Berkshire counties, Mass., and Litchfield County, Conn. It is known at Lancaster, N. H., and Alstead, N. H., and is reported as rare by Batchelder in the vicinity of Manchester (Proc. Manchester Inst. Arts & Sci. IV. ii. 24, 1909. This report needs confirmation by specimens). Curiously enough, Eugene P. Bicknell found a lone station for this in August, 1896, at York, Me., "one luxuriant cluster in rich deciduous woods near the York River, about one mile above the railroad bridge." This is more common in the moist calcareous regions of the Green Mts. than in the drier Taconic Range. Sometimes it occurs on trap rock, as at Simsbury, Conn. This plant ranges south to Georgia along the mountains, also west to Minnesota. It has thus a typical Alleghenian range.

Ranunculus allegheniensis has the range its name suggests, but is likewise abundant in dry diorite areas around Boston and has been found in moist soil on Assonet Neck in Berkeley, Mass., and at Lincoln, R. I., by S. N. F. Sanford. Northward it is known only from West Lebanon, N. H. (Dr. G. G. Kennedy), Smugglers Notch, Vt. (E. F. Williams), and West Haven, Vt. (George L. Kirk).

Ranunculus micranthus and *R. fascicularis* seem to prefer dry trap rock. The former is occasional around Boston, has one station in Hampden Co., Mass., appears at Limerock, R. I., and along the trap ridges of central and western Connecticut. *R. fascicularis* grows in the vicinity of Boston, especially over diorite, is frequent in the Connecticut valley in Massachusetts, and occurs at scattered localities in the western half of Connecticut, with an isolated station at Franklin. In Vermont it has been collected at Snake Mt., Weybridge

(E. Brainerd). There are old printed records, with no specimens, from Burlington, Norwich and Brattleboro, and it is also in Jesup's Hanover list.

MISCELLANEOUS SPECIES.

<i>Caltha palustris</i>	<i>Ranunculus longirostris</i>
<i>Cimicifuga racemosa</i>	" " <i>Purshii</i>
<i>Hydrastis canadensis</i>	" " <i>reptans</i> , var. <i>ovalis</i>
<i>Ranunculus delphinifolius</i>	<i>Thalictrum dasycarpum</i>
	<i>Trollius laxus</i>

These plants seem not to fall definitely into any of the above groups, nor can they, with the data at hand, be placed altogether satisfactorily in groups of their own.

Caltha palustris has the most perplexing range of any species in the family. It is very abundant in wet, mucky woods and meadows in southern New England, follows up the Merrimac to Concord, N. H., and occurs also along the coast as far as southeastern Maine. Elsewhere it seems to be largely a plant of heavy clay soils in calcareous areas. It is especially abundant in Aroostook county and the Piscataquis valley (M. L. Fernald), with scattered stations at Orono and Skowhegan in central Maine. It is also in northern Coös county, N. H. (A. S. Pease), at Hanover, N. H. (G. G. Kennedy) and in calcareous regions of Vermont. It is abundant at an elevation of 2000 ft. in a spruce swamp at Walden, Vt., but seems to avoid the higher mountainous regions.

Cimicifuga racemosa finds its natural eastern limit in southwestern Connecticut. Other stations appear to be introduced. It belongs to a small group of plants, represented by *Liquidambar Styraciflua* and *Heuchera americana*, of coastal plain or Alleghenian range which touch New England only at its southwestern corner. They should perhaps be classified with the "Southern species of dry soils" but are noteworthy because their range in our region is so limited.

Hydrastis canadensis has been found only at Shelburne, Vt. (F. H. Horsford), Weybridge, Vt. (W. W. Eggleston), Plainville, Conn. (J. N. Bishop), and at the base of Meriden Mt., Southington, Conn. (Mrs. E. R. Newell). *Trollius laxus* has a more limited range and in

New England has been found only in northwestern Connecticut. Mr. E. E. Brewster found it in a swampy meadow at 1100 feet elevation in Cornwall in 1879, and it also occurs in a swampy wood-margin in Canaan. Both of the foregoing are species of the northeastern Mississippi basin east of the prairie and the adjacent Alleghenian region, and just reach western New England. They are not, perhaps, strictly calciphiles but our stations for them are in more or less calcareous districts.

Ranunculus longirostris is rare in Vermont and local at Salisbury, Conn. Its New England range is thus similar to that of the two preceding species, but according to the manuals, its general range is much more extended.

Ranunculus delphinifolius is a water plant with scattered stations, not reported from the northern half of Maine and New Hampshire, southern Vermont and Cape Cod. More reports are needed for conclusions.

R. Purshii was discovered by Prof. M. L. Fernald at New Limerick, Aroostook county, Me., and later at Phair in the same region by C. H. Bissell and R. W. Woodward. These are evidently southern limits of a circumpolar species. *R. reptans*, var. *ovalis* is more southerly than the species in its range, but not enough specimens are available for generalization.

Thalictrum dasycarpum is known only in southeastern Connecticut at Franklin (R. W. Woodward) and at Groton (C. B. Graves). The specimen from Milton, Mass., quoted in *RHODORA* xviii. 168, 1916 was incorrectly determined.

C. H. KNOWLTON.
W. S. RIPLEY, JR.
C. A. WEATHERBY.

CARDAMINE OLIGOSPERMA AND ITS NEAR ALLIES.

WILHELM SUKSDORF.

IN Mr. G. S. Torrey's article "The Varieties of *Cardamine oligosperma*" (*RHODORA* 17 p. 156, 1915) my notes on *C. oligosperma* and related forms were quoted. Since that time I have been able to make some further examinations and still believe that these forms should

be treated as species. I venture, therefore, to make the necessary changes, and it may be well to point out at the same time a few errors or inaccuracies that occur in those notes spoken of.

Cardamine lucens (G. S. Torrey) n. comb. *C. oligosperma* var. *lucens* G. S. Torrey, RHODORA 17, p. 157. Leaflets 7-11 (as in *C. oligosperma*); petals very narrowly cuneate or oblanceolate, tapering gradually to the base, 2 mm. long, about twice as long as the calyx; pods 2 cm. long or less, a little over 1 mm. wide, their pedicels 4-14 mm. long or sometimes longer (26 mm.) the lower usually much longer than the upper.

Cardamine bracteata (O. E. Schulz) n. comb. *C. hirsuta* subsp. *oligosperma* var. *bracteata* O. E. Schulz (1903). *C. oligosperma* var. *bracteata* G. S. Torrey, RHODORA 17, p. 157 (1915). Leaves with 3-7 leaflets, the upper pinnately parted rather than pinnate; petals spatulate (as in *C. oligosperma*, but smaller) 2 mm. long, not twice as long as the calyx; pods 2 cm. long or usually shorter, 1.5 mm. wide, the lower on pedicels 4-10 (or 14) mm. long; seeds orbicular with a narrow thin pale margin.

C. oligosperma differs from the other two species by a more abundant (and longer) pubescence which extends to the ovary; by its longer seeds which are 1.5 mm. long and 1 mm. wide; and by larger flowers (3 mm. long) and short pedicels (2-8 mm. long). In all three species the number of seeds is about the same, namely 15-20 or less to a pod; but the seeds being much longer than broad in this species, the pods are often 2.5-3 cm. long.

C. unijuga Rydb. may also be a distinct species if absence of bracts and fewer leaflets are constant characters. According to Rydberg the pods have 8-12 seeds only, but his figure of the plant seems to indicate that there may be more sometimes. This plant appears to be nearest to *C. bracteata*.

Some specimens collected about a shaded spring this season, make it seem probable that my plant referred to *C. oligosperma* var. *unijuga* by Mr. Torrey, may be a shade form of *C. bracteata*; however, further observations may be needed to prove it. The type specimen of *C. bracteata* grew in a sunny place.

At the time my notes were written, nothing was known to me of Mr. Schulz's monograph. My specimen of the plant distributed as true *C. oligosperma* in my sets of 1885 was not then where it belonged in my collection and therefore was not examined. The result was

that I believed it to be the common form (*C. lucens*) whereas it really was part of the type collection of *C. bracteata*. In my own collection this plant is numbered 723 and (503), the latter being a provisional number under which a specimen was sent away for determination. I was not aware of the importance of numbering plants, until distributions had been made for several years and so the numbers were placed on the lists only and not on the plant labels. So it happens that many of the earlier specimens have or should have two different numbers on their labels, one of them in parenthesis. Many specimens received no number at once when collected, but years later, and for that reason mistakes sometimes occur. Thus the number of the plant referred by Mr. Torrey to *C. oligosperma* var. *unijuga*, although collected in 1881, should be 7238 instead of 723, the latter being the proper number of the type collection of *C. bracteata*. When numbering was begun more carefully, it was thought necessary to have a separate set of numbers for each state where collections had been made. This need not cause doubt or confusion where the fact is known. Mistakes cannot always be avoided, but they may be corrected sometimes. A clerical error of little or no consequence occurs in Mr. Torrey's article in the name of a county: Skaminia should be Skamania.

BINGEN, WASHINGTON.

THE FLOWER OF *AGALINIS* — A CORRECTION.—In the description of the flowers of *Agalinis*, on page 135 of the current volume of *RHODORA*, two words should be inserted, so that the statement on line 5 shall read: “*around and between* which lines are almost always red-purple spots.” The spotting is confined to the anterior side of the corolla, but there frequently, indeed most frequently, lies along the two yellow lines. I regret the oversight which permitted such an error or partial statement of fact; however, as affecting the contrast with *Aureolaria* the point is unimportant. *Agalinis* is still to be distinguished by the elaboration of a very definite color-pattern.

In speaking of the two lines as “yellow,” allusion is made to the color pigment present, not to its intensity. Possibly more often the word “yellowish” should be preferred in description. Although

the corolla-color of *Agalinis* never conforms to my conception of "purple," I have yet used that term in the compound "red-purple" in describing the spotting. I believe that this accords with current usage; however the expression "red" or "dark-red" is certainly truer, as the color seems to be but an intensification of the ground-color of the corolla. We are much in need of standard nomenclature for color; perhaps the use of Ridgway's "Color Standards and Nomenclature" is best, though to most of us his terminology would sound strange.—F. W. PENNELL, New York Botanical Garden.

Vol. 20, no. 238, including pages 173 to 188, was issued 11 November, 1918.

Figs. 1-5. \times *CYPERUS WEATHERBIANUS*.Fig. 6. *CYPERUS DENTATUS*.Fig. 7. *RYNCHOSPORA CAPITELLATA*.

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